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**Shelby Nicole Wilson\*** ([shelby.wilson@morehouse.edu](mailto:shelby.wilson@morehouse.edu)), Department of Mathematics, 830 Westview Dr., Atlanta, GA 30314. *Mathematical Model of Temperature Effects on Human Sleep Regulation.*

Sleep is a behavioral state in which we spend nearly one third of our lives. This biological phenomenon clearly serves an important role in the lives of most species. Here, we present a mathematical model of human sleep–wake regulation with thermoregulation and temperature effects. Simulations of this model show features demonstrated in experimental data such as elongation of duration and number of REM bouts across the night as well as the appearance of awakenings due to deviations in body temperature from thermoneutrality. The model highlights how temperature effects interact with sleep history to effect sleep regulation. This model serves to insights into the role that temperature plays in abnormal sleep behavior. (Received September 20, 2016)